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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,005	08/12/2005	Ulrich Katscher	PHDE020083US	9846
38107 7590 09/21/2007 PHILIPS INTELLECTUAL PROPERTY & STANDARDS 595 MINER ROAD CLEVELAND, OH 44143			EXAMINER FUJITA, KATRINA R	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 09/21/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/510,005

Applicant(s)

KATSCHER ET AL.

Examiner

Katrina Fujita

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 09/30/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to remarks received on September 30, 2004. Claims 1-7 and newly added claims 8 and 9 are pending.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 3 is objected to as failing to comply with 37 CFR 1.84(p)(5) because it include the following reference character(s) not mentioned in the description: S14, S12, S13.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the

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application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

The first line of the specification does not include a sentence acknowledging applicant's claim for foreign priority. The examiner suggests amending the specification to include that information.

Appropriate correction is required.

Claim Suggestions

4. In claim 5, line 3, "the following steps" should be changed to -- comprising the following steps steps: --.

Claim Objections

5. The following is a quotation of 37 CFR 1.75(a):

The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

6. Claims 1, 4-6, 8 and 9 are objected to under 37 CFR 1.75(a), as failing to particularly point out and distinctly claim the subject matter which application regards as his invention or discovery.

Claim 1 lacks antecedent basis for "the selective imaging" in line 1. The following will be assumed for examination purposes: -- the selective imaging --. The same applies to claim 6, line 1.

Claim 1 lacks antecedent basis for "the image data" in line 5. The following will be assumed for examination purposes: -- the image data --. The same applies to claim 6, lines 10 and 12.

Claim 1 lacks antecedent basis for "the image reconstruction" in line 13. The following will be assumed for examination purposes: -- the image reconstruction --. The same applies to claim 4, line 2.

Claim 5 lacks antecedent basis for "the calculation" in line 2. The following will be assumed for examination purposes: -- the calculation --.

Claim 5 lacks antecedent basis for "the initial calculation" in line 2. The following will be assumed for examination purposes: -- the initial calculation --.

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Claim 6 lacks antecedent basis for "the selected image region" in line 13. The following will be assumed for examination purposes: -- ~~the~~ a selected image region --.

Claim 8 lacks antecedent basis for "the first image set" in line 9. The following will be assumed for examination purposes: -- the first image data set --.

Claim 8 lacks antecedent basis for "the reconstructing set" in line 9. The following will be assumed for examination purposes: -- ~~the~~ a reconstructing set --.

Claim 8 lacks antecedent basis for "the second data set" in line 10. The following will be assumed for examination purposes: -- the second image data set --. The same applies to claim 9, line 7.

Claim 9 lacks antecedent basis for "the first data set" in line 6. The following will be assumed for examination purposes: -- the first image data set --.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and

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Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

8. Claim 7 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 7 defines a computer program embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

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Note:

A "signal" (or equivalent) embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "signal" is a form of energy, in the absence of any physical structure or tangible material.

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. In the case where the specification defines the computer readable medium or memory as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to include the disclosed tangible computer readable media, while at the same time excluding the intangible media such as signals, carrier waves, etc.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Vollmar et al. ("Iterative Reconstruction of Emission...", IEEE Article, which includes a specific method found in Schmidlin et al., "Iterative reconstruction of PET images", Phys. Med. Biol.).

Regarding **claims 1 and 6-9**, Vollmar et al. discloses a method, device for selective imaging of body structures, and a computer program which includes programming means for making a computer carry out the method when the computer program is executed on a computer ("computer simulations and a PET study of a cat" at section III, line 11), the method comprising steps where:

a first image data set is acquired by means of a first tomography method ("PET study" in figure 3),

a second image data set is acquired by means of a second tomography method which has a resolution which is higher than that of the first method ("MR study" in figure 3), image data of the first and the second image data set coinciding at least partly in space ("Registration" in figure 3),

an image is reconstructed from the first image data set ("images with improved resolution" in figure 3), and

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the image data to be imaged is selected from the first image data set by means of the second image data set ("A-priori-information" in figure 3), wherein for the reconstruction from the first image data set

first at least one image region to be imaged is selected from the second image data set ("same anatomical region" in figure 2 caption), and

subsequently the reconstruction is calculated from the image data of the first image data set which are situated in the selected image region ("Cologne HOSP" in figure 3).

Regarding **claim 2**, Vollmar et al. discloses a method wherein the first tomography method is a nuclear medical tomography method, notably SPECT or PET.

Regarding **claim 3**, Vollmar et al. discloses a method wherein the selection of the image region is performed by means of an automatic segmentation method ("Segmentation Thresholds" in figure 3).

Regarding **claim 4**, Vollmar et al. discloses a method wherein the reconstruction is carried out by way of iterative backprojection ("iteration substeps are non-simultaneous (single projection)" at section 1-B).

Regarding **claim 5**, Vollmar et al. discloses a method wherein calculation of the image consists of initial calculation of an image by backprojection of the image data to be imaged of the first image data set, comprising the following steps:

numerical formation of an iteration image data set from the calculated image (" $x_i(n,p)$ ", Schmidlin et al. at section 2.1, paragraph 4, line 3),

determination of the difference between the first image data set and the iteration image data set ("correction is applied directly to the image", Schmidlin et al. at section 2.1, paragraph 4, line 2),

calculation of an iteration image by addition of the difference to the calculated image (" $x_i(n,p)$ ", Schmidlin et al. at section 2.1, paragraph 4, line 4), and the iterative repetition of these steps for the calculated iteration images until at least one convergence criterion is satisfied, that is, notably the difference dropping below a predetermined convergence value ("converge to zero", Schmidlin et al. at section 2.4, line 13).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,553,356, US 5,834,779, US 2003/0128801, US 7,218,766 and US 2003/0156684 are pertinent as disclosing tomography imaging systems employing image reconstruction.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katrina Fujita whose telephone number is (571) 270-1574. The examiner can normally be reached on M-Th 8-5:30pm, F 8-4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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